



HEALTH AND SAFETY PLAN

Libby Asbestos Project Inventory and Cleanup Siefke / Brownlee Properties Libby, Montana

**Contract No. DTRS57-01-D-30006
Task Order No. 003**

Prepared for:

US Department of Transportation
Research and Special Programs Administration
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TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NO.</u>
1.0 INTRODUCTION.....	1
1.1 KES Corporate Health and Safety Plan	1
1.2 Background	2
1.3 Site Location.....	2
1.4 Scope of Work	3
1.5 Key Personnel and Organization	4
2.0 POTENTIAL SAFETY AND HEALTH HAZARDS	6
2.1 Public Safety and Health	6
2.2 Worker Safety and Health.....	6
2.2.1 Chemical Hazards.....	6
2.2.2 Physical Hazards	7
2.2.3 Biological Hazards	8
2.3 Job Hazard Analysis	9
3.0 HAZARD CONTROL	9
3.1 Training Requirements	9
3.2 Work Zones	10
3.3 General Work Practices and Accident Prevention	11
3.4 Personal Protective Equipment.....	11
3.5 Decontamination Procedures.....	12
3.6 Emergency Procedures	12
3.7 Medical Monitoring	13

APPENDICES

A	Site Maps
B	Organization Chart
C	Forms (Acknowledgment, Site Entry Log, and Tailgate Safety Meeting)
D	Emergency Telephone Numbers
E	Hospital Map
F	Standard Operating Procedures
G	Job Hazard Analysis

1.0 INTRODUCTION

This Health and Safety Plan (HSP) has been formulated to set forth the guidelines for safety and health issues and appropriate procedures to be followed during the inventory and cleanup of the Siefke and Brownlee properties. Both properties are located in the town of Libby, Montana. The work is being performed under Contract No. DTRS57-01-D-30006, Task Order No. 003.

This plan covers work being performed by Kuo Environmental Services (KES) employees and subcontractors. While at the Libby Project site, KES employees and subcontractors will also follow the Libby Project Health and Safety Program prepared by CDM Federal Programs Corporation.

1.1 KES Corporate Health and Safety Program

KES maintains a comprehensive Health and Safety Program consistent with the guidelines and requirements presented in the following documents. Kuo considers safety the highest priority during field activities involving potentially contaminated materials and has established a policy of minimizing exposure, which must be upheld on all projects. Project activities will be conducted in a manner that minimizes the possibility of injury, accident, or incident occurrence. KES employees, subcontractors, and visitors are required to read and sign the HSP before site entry.

OSHA Safety and Health Standards, 29 CFR 1910/1926, U. S. Department of Labor, Occupational Safety and Health Administration

OSHA Standard, 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response

Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH/OSHA/EPA/USCG, DHHS (NIOSH) Publication No. 85-115, 1985

US Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, October 1992

USACE, Appendix B, Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, ER 385-1-92

American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices for 1994-1995

CAL-OSHA, 8 CCR Chapter 4, Subchapter 7, General Safety Orders

CAL-OSHA, 8 CCR Chapter 4, Subchapter 4, Construction Safety Orders

Health and Safety Manual, KUO Environmental Inc., September 1994

Standard Operating Procedures (SOPs) in KES's Health and Safety Manual related to soil excavation activities are included in Appendix F for reference.

1.2 Background

W.R. Grace previously operated a vermiculite mine outside of the town of Libby, Montana. The mine is located on Zonolite Mountain approximately seven miles northeast of Libby. Vermiculite is used in various building materials and textiles. It is also used as a sub base and as a soil conditioner. According to historical records, 80 percent of the world's vermiculite came from the W.R. Grace Vermiculite Mine. The mine began operation in 1924 and was operated until 1990. When the mine was in operation, the ore was trucked to the mill. Processing at the mill included screening the ore into various sizes and running the ore through an expansion oven to increase the size of the vermiculite particles. The site also included a railroad loading facility where processed and unprocessed ore was loaded onto railcars for shipment and distribution. This site is also referred to as the "Screening Plant", "Railroad Loading Facility" and "Raintree Nursery". The Screening Plant site is located approximately 4.5 miles northeast of Libby on the northeast side of the Kootenai River.

The W.R. Grace vermiculite contains concentrations of tremolite. Tremolite is a rare and exceedingly toxic form of asbestos. During the six decades of operation of the mine and screening plant millions of tons of vermiculite was mined and shipped from Libby. It is also estimated that tons of asbestos was also released into the air causing possible contamination of various parts of the area, including portions of the town of Libby.

1.3 Site Location

The main work area is the Siefke property. The Siefke property is located at 3496 HWY 2 South, in Libby, Montana. See attached Site Maps (Appendix A). The Siefke site contains several structures, a garden area, a corral, and numerous vehicles and tractors. Possible causes of asbestos contamination at this site is airborne dust, purchase and storage of equipment obtained from sales at the mine, and use of vermiculite as a soil conditioner. The structures include the following:

- House – single story, single family dwelling
- Warehouse – wooden single story unfinished motel
- Storage – two story metal building with attached wooden structures
- Wood Shed – two story wooden building
- Barn – single story wooden building
- School Bus – currently being used as storage

- Several smaller wooden and metal sheds

The second work area is the Brownlee property. The Brownlee property is located at 819 Cabinet View Heights, in Libby Montana. The Brownlee site consists of a single-family dwelling, a landscaped yard, and a garden area. Asbestos contamination at this site consists of the import and use of vermiculite as a soil conditioner. See attached Site Maps (Appendix A).

1.4 Scope of Work

Work under this task order consists of three work phases. Phase I is the production and submittal of plans. Phase II is project planning and production of an Inventory / Appraisal Report of property items at the Siefke site. Phase III is the cleanup and disposal activities at the Siefke and Brownlee sites. Specific tasks are as follows:

Phase I

- Submittal of the Project Work Plan (PWP), Site Specific Health and Safety Plan (HSP) and Project Schedule

Phase II

- Mobilization to Site
- Removal Cost management System (RCMS) training

Siefke Site:

- Setup of temporary facilities at site
- Construction of decontamination facilities
- Construction of temporary storage facilities
- Removal and inventory of property items
- Storage of property items
- Submittal of Inventory / Appraisal Report

Brownlee Site:

- Coordination with CDM Federal Programs Corporation (CDM) and DOT Volpe representatives to determine scope and extent soil excavation and removal activities

Phase III

Siefke Site:

- Decontamination of property items designated to be salvaged
- Storage of decontaminated salvage items
- Transportation and removal of property items designated to be disposed of
- Demolition of designated structures
- Decontamination of designated structures
- Excavation of contaminated soils

- Transportation and disposal of contaminated soils
- Backfilling of excavations with appropriate clean imported soil
- Site cleanup
- Demobilization

Brownlee Site:

- Removal of fence (if required)
- Excavation of contaminated soils
- Transportation and disposal of contaminated soils
- Backfilling of excavations with appropriate clean imported soil
- Reinstallation of fence (if necessary)
- Site cleanup
- Demobilization

1.5 Key Personnel and Organization

The project organization chart is presented in Appendix B. The safety and health designees and their general responsibilities are presented below. Field employees have OSHA 40-hour hazardous waste operations training, as well as required refreshers and any other additional training required by their job duties.

Project Manager

KES Project Manager, Mr. Mark Hallock, communicates directly with the US DOT representative and will serve as the primary point of contact. He is responsible for all site activities including:

- Ensuring that safety and health requirements are met.
- Briefing field team on specific duties.
- Controlling site access.
- Providing liaison with public officials.

Corporate Safety and Health Officer

As the Corporate Safety and Health Officer (SHO) and Certified Industrial Hygienist (CIH), Mr. Michael Ridosh is responsible for the development of this HSP in compliance with OSHA standards and KES safety and health policies. Additional responsibilities include:

- Modifying and/or developing new safety and health procedures as necessary.
- Ensuring all on-site personnel have been medically certified and trained in accordance with applicable OSHA standards in order to perform field activities.
- Reviewing medical surveillance procedures as outlined in KES's Safety and Health Plan.

- Conducting initial site-specific training.
- Being available for consulting during work activities and for emergencies.
- Reviewing accident reports, air monitoring reports, and daily inspection reports.
- Selecting respiratory protection, personal protective equipment (PPE), and levels of protection.
- Authorizing a stop-work order if he determines, in consultation with the Site Safety Officer (SSO), that a safety hazard or potentially dangerous situation exists.

Site Safety Officer

Mr. Robert Hurns will be the Site Safety Officer (SSO) on this project. The SSO implements and enforces the project safety program and procedures at the project site. The SSO has safety and health experience. The SSO will report directly to the SHO. On-site safety and health concerns will be the responsibility of the SSO. Specific responsibilities include:

- Selecting the proper level of PPE and respiratory protection in accordance with this HSP and ensuring its use by all onsite employees.
- Regularly inspecting all PPE and providing proper maintenance and storage of PPE.
- Monitoring on-site workers for signs of stress (e.g., heat stress, cold exposure, toxic exposure, and general fatigue).
- Participating in the preparation of the HSP and ensuring its implementation on site.
- Conducting daily safety meetings and inspections.
- Implementing evacuation procedures and coordinating emergency on-site medical care and services, when necessary.
- Keeping the project SHO apprised of any conditions not covered in this HSP.
- Issuing a stop-work order if site conditions change or if procedures are not being followed or appear inadequate.

Other Project Personnel

KES and subcontractor personnel who constitute the field team will have the following individual and collective responsibilities:

- Read and be thoroughly familiar with all aspects of the HSP.
- Complete all assigned tasks in compliance with the HSP.
- Notify the SHO of any potentially unsafe conditions.
- Attend all on-site safety meetings.

The field team will include at least two individuals with current CPR and First-Aid training.

2.0 POTENTIAL SAFETY AND HEALTH HAZARDS

This section presents the potential chemical, physical, biological, and task-specific hazards posed to site workers and the public during the field activities.

2.1 Public Safety and Health

The site activities pose minimal risk, if any, to the public and because the work is performed in a limited access area. Potential risks to public safety and health are limited to physical injury during site work and hauling of the materials. To avoid these risks, the project site will be partitioned off to prevent unauthorized access and warning signs will be posted. Designated trucking routes will be established and adhered to during hauling of materials to and from the work sites.

2.2 Worker Safety and Health

Potential hazards at the site include:

- Asbestos exposure;
- Physical hazards from lifting, tripping, equipment operations, falling, and excessive noise levels;
- Heat stress;
- Biological hazards from animal bites, insect stings, and bird and rodent droppings.

This HSP describes KES's SOPs (Appendix F), potential hazards to safety and health, the measures to be taken by KES personnel and subcontractors to minimize those hazards, and procedures to be followed in the event of an emergency on site.

2.2.1 Chemical Hazards

The contaminant of concern for this project is asbestos. Asbestos is a generic term for a group of six naturally occurring, fibrous silicate minerals that have been widely used in commercial products. Asbestos minerals fall into two groups of classes: serpentine asbestos and amphibole asbestos.

Serpentine asbestos includes the mineral chrysotile, which is a magnesium silicate mineral. Serpentine asbestos possesses relatively long and flexible crystalline fibers that are capable of being woven.

Amphibole asbestos includes the minerals amonite, crocidolite, tremolite, anthophyllite, and actinolite. Amphibole asbestos forms crystalline fibers that are substantially more brittle than serpentine asbestos.

The vermiculite mined from the Libby site contains concentrations of tremolite. Tremolite-actinolite asbestos is known to be present at the site.

Asbestos is of potential health concern because chronic inhalation exposure to excessive levels of asbestos fibers suspended in the air can result in lung disease such as asbestosis and lung cancer and mesothelioma. Asbestosis is a non-cancer type of disease that makes breathing progressively more difficult due to scarring of the lung tissue. Asbestosis can be fatal. Asbestos fibers can also cause lung cancer and mesothelioma. Mesothelioma is a rare cancer of the lining of the lungs and chest cavity. Mesothelioma is always fatal and almost always is associated with asbestos exposures. Asbestos has also been associated with increases in digestive cancers from accidental ingestion.

The primary concern is breathing airborne asbestos fibers. All site personnel will be protected from asbestos exposure through work practices. These work practices will include wetting techniques, covering trucks during hauling, bagging items for disposal, considering wind direction during work activities, air monitoring, and proper use of PPE.

2.2.2 Physical Hazards

Physical hazards are inherently present during field operations. The primary health risk for this project is associated with excavation and demolition activities. Other physical hazards presented at the site will include the mechanical hazards and noise exposure associated with the operation of heavy equipment, and slip/trip/fall hazards associated with operations conducted in a field environment. Applicable SOPs are included in Appendix F. Typical physical hazards present on the site and methods to prevent injury due to these hazards are described below.

Heavy Equipment Operation

The worker can effectively eliminate safety hazards associated with the operation of heavy equipment if a constant awareness of these hazards is maintained. Constant visual or verbal contact with the equipment operator will facilitate such awareness.

Slip, Trip and Fall Hazards

While it is difficult to prevent slip/trip/fall hazards, risk of injury will be minimized by implementing proper site control measures such as daily safety meetings, proper footwear, and by keeping the work area free of obstructions and spilled fluids.

Lifting Hazards

Field operations often require that heavy physical labor tasks be performed. All employees will be instructed in proper lifting techniques. Additionally, employees will be instructed to not attempt to lift large or heavy objects without assistance.

Tool and Equipment Hazards

Safety hazards present during the use of tools and equipment are generally associated with improper tool handling and inadequate maintenance. Management of these hazards involves rigorous maintenance of tools and equipment and effective training of employees in the proper use of these tools.

Noise Levels

Whenever feasible, noise levels, identified as exceeding 85 decibels as a time weighted average over an 8-hour day, will be reduced by means of engineering controls. These controls will include isolation, enclosure, and application of noise reduction materials. Hearing protection shall be worn at all times when noise levels are suspected of being equal to or exceeding 85 decibels. Use of portable "walkman-type" radios is prohibited on the site. A copy of the OSHA Occupational Noise Standard, 29 CFR 1910.95, shall be available and copies shall be made available to employees upon request. KES maintains a hearing conservation program in accordance with 29 CFR Part 1910.95.

Weather

The weather is an important consideration in planning and conducting site operations. Rain and extremely hot or cold weather can cause physical discomfort, loss of efficiency, and personal injury. Of particular importance is heat stress, which often results when protective clothing decreases the body's natural ventilation process. In addition, the high humidity often present inside a tank contributes to the heat load. The Cold Stress and Heat Stress prevention procedures are included in Appendix F.

All exterior site work will cease immediately and the site will be evacuated in the event of lightning, precipitation, or winds exceeding 40 miles per hour. All operations inside the tank will cease immediately whenever an electrical storm is in progress or threatening in the immediate area.

2.2.3 Biological Hazards

The following biological hazards may be encountered on site although such encounters are not anticipated to pose a significant risk to site personnel:

- Animal bites and insect stings can cause localized swelling, itching, and minor pain that can be handled by first aid treatment. In sensitized individuals, however, effects can be more serious such as anaphylactic shock, which can lead to severe reactions in the circulatory, respiratory, and central nervous system, and in some cases, even death. The SSO will identify personnel with a known reaction to bites and stings at the pre-job safety orientation meeting. No attempts should be made to capture any wild or semi-wild animals such as cats or rats due to the possibility of a bite or parasitic infection.
- Exposure to animal droppings can cause infectious diseases such as hepatitis B and Hanta virus. The potential to inhale infectious airborne particulate must be minimized. If such droppings are present, workers may don PPE, wet the area to abate dusty conditions, or remove the material prior to starting the work.

2.3 Job Hazard Analysis

Job hazard analysis identifies the potential hazards posed by each major field activity, as well as the hazard control measures to be implemented to abate these potential hazards. Appendix G presents an activity hazard analysis for the anticipated site activities. Physical hazards are of primary concern during the field operations.

3.0 HAZARD CONTROL

Control of potential on-site hazards involves an understanding as well as application of the following topics: Training Requirements, General Work Practices, Personal Protective Equipment, Emergency Procedures, and Medical Monitoring. These topics are discussed below.

3.1 Training Requirements

Although all KES employees have basic training that includes a minimum of 40 hours of instruction in accordance with OSHA 29 CFR 1910.120, plus appropriate refresher training, the work activities for this project do not require such training.

Prior to the start of field operations, personnel will receive site-specific briefings. This will include asbestos awareness and scope of work. Personnel will also be required to verify that they have read and understand the HSP and Libby Health and Safety Program. Appendix C includes Acknowledgment, Site Entry Log, and Tailgate Safety Meeting forms.

3.2 Work Zones

In order to reduce the accidental spread of hazardous substances by workers from contaminated areas to clean areas, the HSO will configure the work site into zones. The work area will be divided into three well-delineated zones:

- Exclusion Zone
- Contamination Reduction Zone
- Support / Clean Zone

Exclusion Zone

The EZ is the area of the site where potential exposure of personnel and equipment is likely to occur. The outer boundary of the EZ will be established by placement of barriers and will be designated by appropriate signs. Access control points will be established to regulate the flow of personnel and equipment into and out of the EZ. Visitors will not be permitted to enter the EZ without the authorization of the SHO and documentation of appropriate and current training.

Contamination Reduction Zone

The CRZ is a transition zone between the EZ and the SZ and is designed to reduce the probability that contamination will be transmitted to the clean SZ. Decontamination is performed within this zone. Decontamination procedures are outlined below. Visitors will not be permitted to enter the CRZ unless authorized by the SHO.

Support Zone

The SZ will be located in a clean, uncontaminated area outside the CRZ. The SZ provides storage areas for clean safety and work equipment and facilities for support activities. No contaminated equipment, samples, or personnel are permitted in the SZ.

The zones will be delineated using caution tape, barricades, and temporary fencing. Personnel will access the Exclusion Zone only through designated locations in the Contamination Reduction Zone.

Complete sampling of the Siefke site structures have not yet been completed. Current task order requirements identify the Warehouse as being contaminated with asbestos containing materials (ACM). Results from future sampling may result in additional structures needing inventory / cleanup activities. Therefore, the work zones may be modified to reflect expanded work areas. Before setting up work zones, KES will coordinate with DOT and CDM representatives to discuss current and potential future sampling results. Any field changes to the work zones and truck route layouts will be documented and submitted for record.

3.3 General Work Practices and Accident Prevention

Maintenance of site control measures, enforcement of safe work practices, and establishment of a spill containment program are essential components of accident prevention at a work site. The following is a listing of general work practices that must be complied with to ensure the greatest degree of safety and accident prevention:

- All personnel working at the site and all visitors to the site are required to read this HSP and to sign the Acknowledgment of Understanding before they may enter the work area. In addition, any person working at the site or visiting the site must sign the Site Entry Log daily.
- Protective clothing and equipment will be worn at the work site at the protective level specified by the SHO or SSO.
- All personnel must use the buddy system at all times while working on site. Under no circumstances shall employees work alone on site.
- Equipment will be kept in proper working order, free of accumulated lubricants, contaminants, or other hazardous or flammable substances.
- No containers of fuels or other flammables will be kept within 100 feet of any excavation and loading operations.
- Daily safety briefings will be held by the SSO.
- All employees will follow policies promulgated in this HSP. Changes in any procedures or policies contained in this plan will only be implemented after approval from the project SHO.

3.4 Personal Protective Equipment

The hazards anticipated to be present during the described inventory, property item decontamination, soil excavation, building demolition, loading and hauling activities will probably require low to moderate level protection. Field personnel will don Level C and D protection PPE during on-site work activities. As conditions warrant, protection levels may be upgraded or modified. The SSO in conjunction with the SHO will determine the appropriate personal protection level. Based upon current knowledge Level A and B protection will not be required for the operations in this Task Order. Level C will be worn during personnel property decontamination, contaminated soil excavation, building demolition, and disposal loading. Level D and modified Level D will be worn during all other activities.

The equipment necessary for Level D is detailed below.

LEVEL D - Level D consists of the basic work uniform, which includes:

- Hard hat
- Safety glasses
- Boots

- Hearing protection
- Cloth and/or leather gloves for equipment operators
- An immediately available half-face respirator with HEPA cartridges

LEVEL C – Level C consists of the following protective equipment:

- Hard hat
- Safety glasses
- Hearing protection
- Half-face respirator with HEPA cartridges
- Tyvek coveralls
- Steel-toed rubber boots
- Nitrile or latex gloves

3.5 Decontamination Procedures

There will be three types of decontamination facilities: personnel, equipment, and property items. A personnel decontamination / changing station will be constructed using wood frame and visquine. Personnel will enter and exit the work area through this station. They will also use this station to don and remove PPE. The station will have a boot wash station, basins to wash face and hands, and a mask cleaning station. Decon water will be collected, filtered, and placed in temporary storage. Filtered water will be sampled and disposed upon receipt of "clean" sample results.

An equipment decon station will be constructed for use during off-hauling activities and before demobilization of construction equipment. Trucks and equipment will drive onto the equipment decon station. Truck tires and equipment will be washed down to remove any dirt or asbestos contamination before the truck or equipment leaves the site. Decon water will be collected, filtered, and placed in the temporary decon storage tank.

Property items that are designated to be decontaminated and returned will be cleaned at the property decontamination station. Small items will be cleaned and rinsed in sinks, and then hand dried. Larger items may require construction of an area similar to the equipment decon station. If such is the case, then the larger items will be sprayed off and either hand or air-dried. Decon water will be collected, filtered, and placed in the temporary decon storage tank.

3.6 Emergency Procedures

Situations that could occur requiring an emergency response action are listed below:

- A spill of fuels and/or lubricants during equipment operations.
- A heavy equipment related or personal injury accident.

A list of emergency response agencies and their telephone numbers and Route to the Hospital Map are included in Appendices D and E. Both will be posted at the project site. Routine emergency procedures include:

Escape Routes

In the event of an emergency, all personnel will evacuate the site and meet at a predetermined agreed upon location. Once the actual borrow site location is selected, the SSO will determine the emergency meeting location. The SSO or Site Supervisor will use the Site Entry Log to ensure that all personnel have evacuated the site.

Evacuation Signals and Other Signals

Due to the small work areas anticipated during this project, creation of evacuation and other signals will not be necessary. Nevertheless, workers should be cognizant of the reduction of communication abilities in high noise areas. In the event of withdrawal from the working area, verbal notification and three blasts from an air horn will be given. A cellular telephone will be at the site if another telephone is not available.

First Aid

A first aid kit will be located at the borrow site and in all KES vehicles. The SSO and another person will be certified by the American Red Cross in first aid and CPR. If an injured individual requires further attention, the individual will be immediately transported to the nearest hospital. A map illustrating the route to the nearest emergency medical facility will be present on site (see Appendix E). All accidents without regard to the severity shall be reported in writing to KES's SHO within 24 hours. All accidents requiring a physician's treatment shall be reported immediately to the SHO.

3.7 Medical Monitoring

Although all KES personnel have completed an annual physical examination that meets the requirements of 29 CFR 1910.120 (F) and Title 8 CCR 1512 there is no such requirement on this project.

The physical examination consists of the following, at a minimum:

- Medical and occupational history.
- Physical examination, with particular emphasis on the cardiopulmonary system, general physical fitness, skin, blood-forming system, renal and nervous systems.
- Urinalysis.
- Blood analysis.

- Additional tests as appropriate, including chest X-ray electrocardiogram stress test, pulmonary function test.

Based on this examination, the physician will certify whether the individual is capable of full participation in the program, or whether this person must work within certain restrictions.

All medical records are held by KES for a period of at least 30 years after the employee's termination of employment, in accordance with OSHA regulations on confidentiality and record keeping.

In addition to the annual physical examination, on-site medical surveillance is standard KES procedure and includes heat stress and cold stress monitoring and prevention, contaminant monitoring, and hearing conservation measures.

APPENDIX A

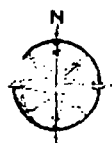
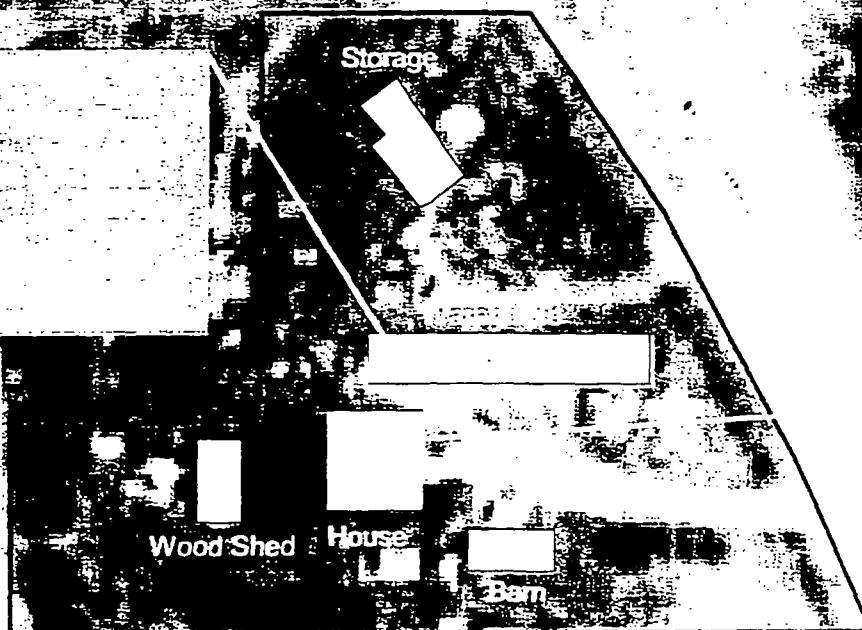
Site Maps

Poor Quality Source Document

The following document images have been scanned from the best available source copy.

To view the actual hard copy, contact the Superfund Records Center at (303) 312-6473.

Sample ID	ISO Concentrations (Air = 10-mph)(Dust = 10-mph)					
	Asbestos			Chrysotile		
	Structures Detected			Structures Detected		
	Length 0.5 to 5 u	Length 5 to 10 u	Length > 10 u	Length 0.5 to 5 u	Length 5 to 10 u	Length > 10 u
1-01701	0.004278	0	0.001069	0	0	0
1-01704	0	0	0	2680	0	0
1-01705	0	0	0	0	0	0
1-01706	8040	2680	2680	0	0	0
1-01707	2680	0	0	4020	0	1340
1-01719	0.000972	0	0	0	0	0
1-01720	0	0	0	115240	16080	0
1-01721	0	0	0	0	0	0
1-01723	1340	2680	0	20100	4020	0



June, 2001

Sample Results (Asbestos)

Siefke Residence
3496 HIGHWAY 2
Libby, MT

Legend:

- Approximate Property Boundary
- Building



Cabinet Heights Road

Barn

House

Garage

Attic Insulation (ND)
1-01822

Indoor Air (ND)
1-01924

Vermiculite Pile (2%)
1-01821

All Soil Samples (ND)

1-01391
1-01392
1-01393
1-01394
1-01395
1-01396
1-01397
1-01398

Note: Soil samples collected August 8, 2001
ND = Not Detected

June, 2001

SAMPLE RESULTS (ASBESTOS)

Brownlee Residence
819 Cabinet Heights Road
Libby, MT

Legend:

- /√ Approximate Property Boundary
- Building
- ▨ Vermiculite Pile

50 0 50 Feet

Federal Programs Corporation



Image Source: United States Geological Survey, 1995.

APPENDIX B

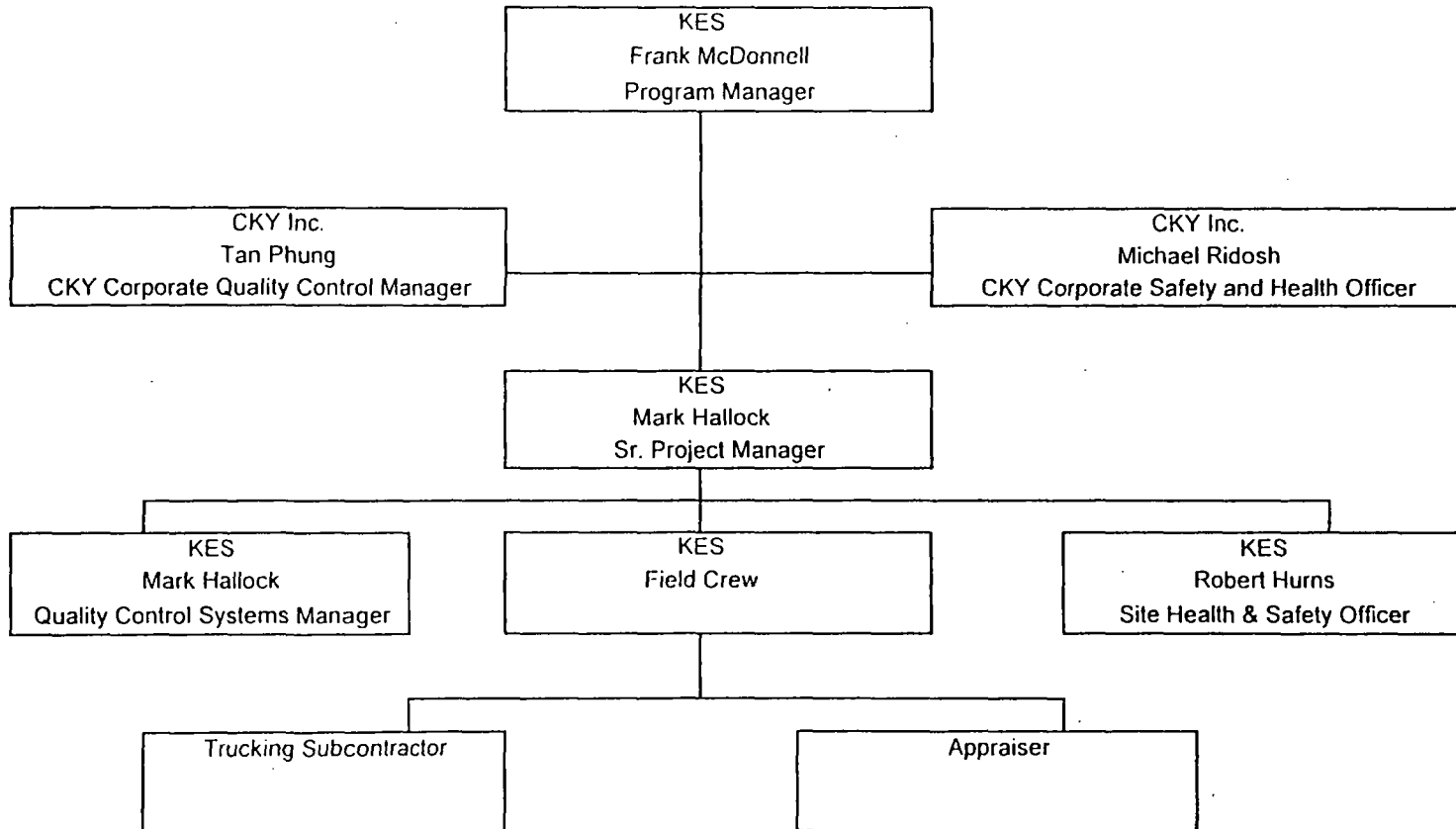
Organization Chart

ORGANIZATIONAL CHART

Inventory / Cleanup
Siefke / Brownlee Properties
Libby, Montana

Contract No. DTRS57-01-D-30006

Task Order No. 003



APPENDIX C

**FORMS:
AFFIRMATION, SITE ENTRY LOG,
AND TAILGATE SAFETY MEETING**

SITE ENTRY LOG

Contract No. DTRS57-01-D-30006

Task Order No. 003

Inventory / Cleanup

Siefke / Brownlee Properties

Libby, Montana

[illegible]

Site Specific Safety and Health Plan Acknowledgement

Contract No. DTRS57-01-D-30006

Task Order No. 003.

Inventory and Cleanup

Siefke / Brownlee properties

Libby, Montana

I have read and fully understand all of the foregoing Site Specific Safety and Health Plan. Any questions regarding the hazards on the job site and the protective measures to be followed have been explained to my satisfaction.

[illegible]

Tailgate Safety Meeting

Job Name: _____

Meeting Date: _____

Job Number: _____

Accidents Since Last Meeting:

Hazards Discussed:

Main Topic of Discussion:

Project Manager _____

Safety Rep: _____

Personnel in Attendance (Please Print Name)

Note: Additional names and comments on reverse side.

Comments:

Project Manager / Supervisor Signature: _____

APPENDIX D

EMERGENCY TELEPHONE NUMBERS

EMERGENCY TELEPHONE NUMBERS

Contract No. DTRS57-01-D-30006

Task Order No. 003

Inventory and Cleanup

Siefke / Brownlee properties

Libby, Montana

Police	911
Fire Department	911
Hospital:	St. John's Lutheran Hospital
	350 Louisiana Ave
	Libby, MT 59923
	406-293-7761
	FAX 406-293-7931
Poison Center	800-532-2222
US Environmental Protection Agency Info Center	406-293-6194
Department of Transportation:	
Volpe Center (John McGuiggin)	617-494-2574
Cell	617-320-4164
Libby (Paul Kudarauskas)	406-293-7922
Cell	617-510-7505
KES Corporate Office (Frank McDonnell)	310-795-0825
KES Elk Grove Office (Mark Hallock)	916-714-3212
Cell	916-804-9954
KES Libby (Mark Hallock)	406-293-6019
FAX	406-293-7262
Health and Safety Officer (Michael Ridosh)	818-888-5894

APPENDIX E

HOSPITAL MAPS

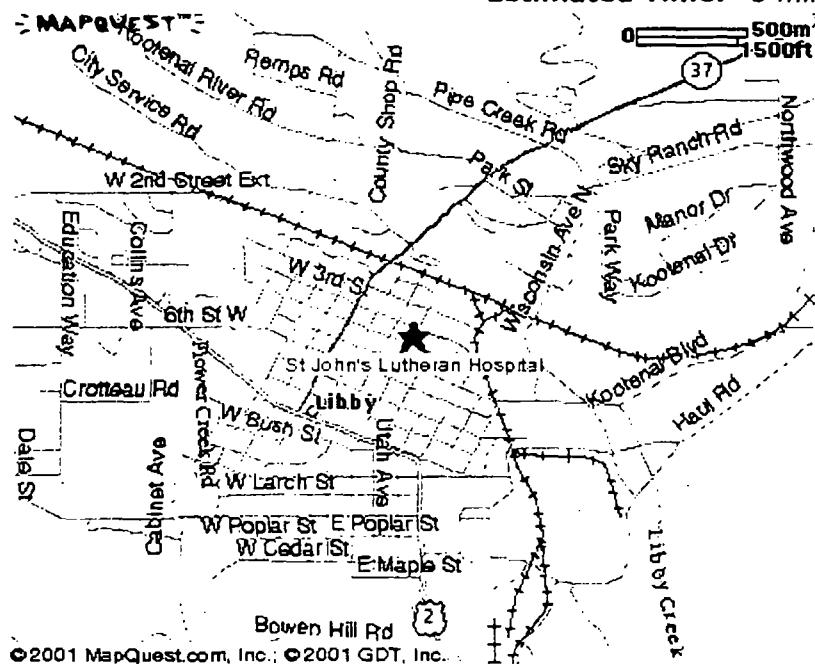
3496 Hwy 2 South
Libby, MT 59923

St John's Lutheran Hospital
350 Louisiana Ave
Libby, MT 59923
(406) 293-0100

- 1: Start out going Southeast on US-2 by turning left.** 1.1 Miles (1.75 Km)
2: Turn LEFT onto CALIFORNIA AVE/MT-37. 0.4 Miles (0.65 Km)

Total Distance: 1.5 miles (2.39 Km)

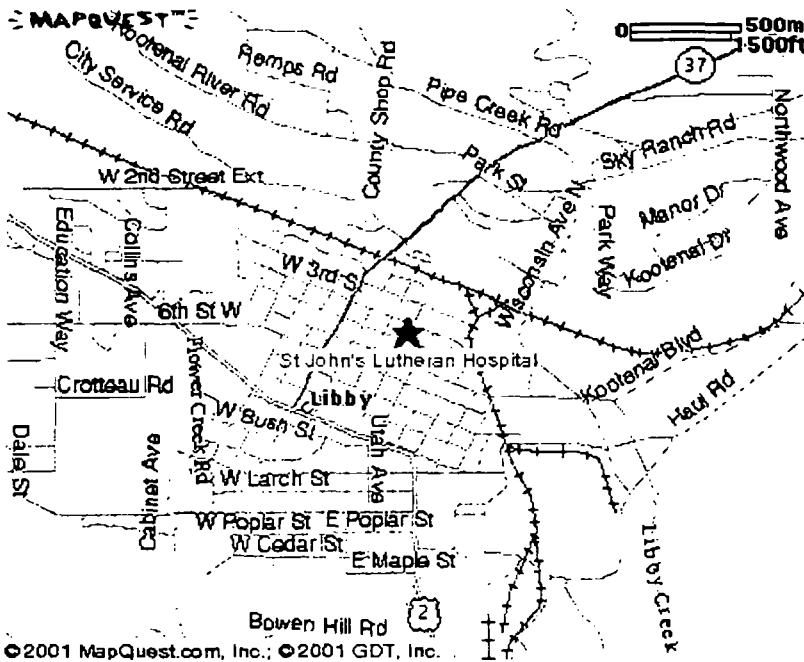
Estimated Time: 3 minutes.



819 Cabinet View Heights
Libby, MT 59923

St John's Lutheran Hospital
350 Louisiana Ave
Libby, MT 59923
(406) 293-0100

- Total Distance:** 1.6 miles (2.52 Km)
Estimated Time: 5 minutes.



APPENDIX F

STANDARD OPERATING PROCEDURES

OPERATING PROCEDURE NO. HS-102

HEAT STRESS

102.1 PURPOSE

To provide general information on heat stress and methods to prevent or minimize the occurrence of heat stress.

Adverse climatic conditions are important considerations in planning and conducting site operations. Ambient temperature effects can include physical discomfort, reduced efficiency, personal injury, and increased accident probability. Heat stress is a particular concern when wearing impermeable protective garments, since these garments inhibit evaporative body cooling.

102.2 REQUIREMENTS

The NIOSH criteria document for heat stress recommends that environmental monitoring and other preventive measures be adopted in hot work environments. The provisions are not directly applicable to employees who are required to wear impermeable protective clothing. The reason for this exception is impermeable clothing prevents the evaporation of sweat, which is one of the most important cooling mechanisms of the body. There is no recognized health standard protection for workers wearing impermeable protective clothing and respirators in hot environments.

The ACGIH has adopted a TLV for heat stress. These guides relate to work/rest regimes.

102.3 ADDITIONAL HAZARD

The use of Personal Protective Equipment (PPE) commonly recommended for hazardous waste work can place stress on the body. One common problem with the use of PPE, especially in hot environments, is heat stress. Protective clothing can cause excessive sweating and can prevent the body from properly regulating body temperature.

102.4 TYPES OF HEAT STRESS

Heat stress is the aggregate of environmental and physical work factors that constitute the total heat load imposed on the body. The environmental factors of heat stress are the air temperature, radiant heat exchange, air movement, and water vapor pressure. Physical work contributes to the total heat stress of the job by producing metabolic heat in the body in proportion to the intensity of the work. The amount and type of clothing also affect the heat stress.

Heat strain is the series of physiological responses to heat stress. When the strain is excessive for the exposed individual, a feeling of discomfort or distress may result, and, finally, a heat disorder may ensue. The severity of strain will depend not only on the magnitude of the prevailing stress, but also on the age, physical fitness, degree of acclimatization, and dehydration of the worker.

Heat disorder is a general term used to describe one or more of the following heat-related disabilities or illnesses:

- Heat Cramps - painful intermittent spasms of the voluntary muscles following hard physical work in a hot environment. Cramps usually occur after heavy sweating, and often begin at the end of a work shift.
- Heat Exhaustion - profuse sweating, weakness, rapid pulse, dizziness, nausea, and headache. The skin is cool and sometimes pale and clammy with sweat. Body temperature is normal or subnormal. Nausea, vomiting, and unconsciousness may occur.
- Heat Stroke - sweating is diminished or absent. The skin is hot, dry, and flushed. Increased body temperature, which, if uncontrolled, may lead to delirium, convulsions, coma, and even death. Medical care is urgently needed.

102.5 METHODS OF CONTROLLING HEAT STRESS

The following control measures are appropriate to aid in controlling heat stress:

- Provide for adequate liquids to replace lost body fluids and replace water and salt lost from sweating. Encourage personnel to drink more liquid than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.
- Replace fluids with water, commercial mixes such as Gatorade or Quick Kick, or a combination of these.
- Establish a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts of workers.
- Wear cooling devices such as vortex tubes or cooling vests beneath protective garments.
- Take all breaks in a cool rest area (77°F is best)
- Remove impermeable protective garments during rest periods.

- Do not assign other tasks to personnel during rest periods.
- Inform personnel of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress

102.6 MONITORING

102.6.1 Temperature

The degree of heat stress can be monitored by the Wet Bulb Globe Temperature Index (WBGT) technique. Where heat stress is a possibility, a heat stress monitoring device, such as the Wibget Heat Stress Monitor (Reuter Stokes) can be utilized.

The WBGT will be compared to the Threshold Limit Values (TLV) outlined by the ACGIH TLV guides, and a work-rest regiment can be established in accordance with the WBGT. Note that 5°C must be subtracted from the TLVs for heat stress listed to compensate for the impermeable protective clothing.

102.6.2 Medical

In addition to the provisions of the CKY medical surveillance program, on-site medical monitoring of personnel should be performed by qualified medical personnel for projects where heat stress is a major concern. Blood pressure, pulse, body temperature (oral), and body weight loss should be taken and recorded by SHSO.

- **Heart Rate** - Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third. If the heart rate still exceeds 110 beats per minute at the next rest cycle, shorten the following work cycle by one-third.
- **Oral Temperature** - Use a clinical thermometer or similar device to measure the oral temperature at the end of the work period (before drinking liquids). If the oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period. If the oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following work cycle by one-third.
- Do not permit a worker to wear a semi-permeable or impermeable garment if his/her oral temperature exceeds 100.6°F (38.1°C).
- **Body Weight Loss** - Measure body weight on a scale accurate to +0.25 pounds at the beginning and end of each work day (also lunch break, if possible) to see if enough fluids are being taken to prevent dehydration. Weights should be taken while the

employee wears similar clothing or, ideally, nude. The body water loss should not exceed 1.5 percent total body weight loss in a work day.

- Portable water and Gatorade or other electrolyte replacement fluid should be available. Workers should be encouraged to drink fluids during rest periods.
- Physiological Monitoring - Initially, the frequency of physiological monitoring depends on the air temperature adjusted for solar radiation and the level of physical work. The length of the work cycle will be governed by the frequency of the required physiological monitoring.

102.7 EMERGENCY ACTIONS

The body temperature must be lowered immediately in any heat stress cases. Evacuate the person to a shady or cool area in the contamination reduction zone. Remove all protective outerwear and personal clothing. Apply cold wet towels, ice bags, etc. to the person's head. Sponge off bare skin with cool water or rubbing alcohol, if available, or even place the victim in a tub of cool water. The main objective is to cool the person without chilling them. Give no stimulants. Transport the person to a medical facility as soon as possible.

102.8 REFERENCES

American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances in the Work Environment, 1984-1988.

National Institute for Occupational Safety and Health, The Industrial Environment, Its Evaluation and Control, 1973.

Olishifski, J.B., Fundamentals of Industrial Hygiene, National Safety Council, 1983.

OPERATING PROCEDURE NO. HS-103

COLD STRESS

103.1 PURPOSE

To establish procedures for the implementation, operation, and monitoring of a cold stress prevention, evaluation, and response program. HS-103 also describes the signs and symptoms which characterize excessive exposure of work site personnel to cold environments. Recognition of these signs and symptoms necessitates prompt corrective action to prevent permanent injury or death.

103.2 REQUIREMENTS

The American Conference of Governmental Industrial Hygienists (ACGIH) has developed tentative Cold Stress Threshold Limit Values (TLVs) that are intended to protect workers from the severest effects of cold stress (hypothermia) and cold injury. The TLVs are also intended to describe exposures to cold working conditions under which it is believed that nearly all workers can be repeatedly exposed without adverse health effects. The TLV objective is to prevent the deep body core temperature from falling below 36°C (96.8°F) and to prevent cold injury to body extremities. Deep body temperature is the core temperature of the body as determined by rectal temperature measurements. For a single, occasional exposure to a cold environment, a drop in core temperature of no lower than 35°C (95°F) should be permitted. In addition to provisions for total body protection, the TLV objective is to protect all parts of the body especially the hands, feet, and head from cold injury.

103.3 TYPES OF COLD STRESS

Two factors influence the development of a cold injury: ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10°F with a wind of 15 mph is equivalent in chilling effect to still air at -18°F (See Table HS-103-1).

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed because the clothing underneath is soaked with perspiration.

Persons working outdoors in temperatures at or below freezing may experience frostbite. Extreme cold for a short time may cause severe injury to the surface of the body. Areas of the body that have a high surface area to volume ratio, such as fingers, toes, and ears, are the most susceptible to frostbite or cold stress.

103.3.1 Frostbite

Local tissue damage caused by exposure to low temperature environmental conditions is included in the generic term frostbite. There are several degrees of damage and severe occurrence may lead to deep tissue damage, gangrene and loss of the affected parts. Frostbite of the extremities can be categorized into:

- Frost nip or incident frostbite - the condition is characterized by sudden blanching or whitening of skin.
- Superficial frostbite - skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- Deep frostbite - tissues are cold, pale, and solid; extremely serious injury.

103.3.2 Hypothermia

Hypothermia is the lowering of the body's core temperature due to exposure to cold. Authorities agree that there are degrees of hypothermia which are characterized as "moderate" and "severe." A victim of moderate hypothermia may exhibit the first seven signs listed below, is still conscious but often confused. Severe hypothermia is determined by extreme skin coldness, loss of consciousness, faint pulse and shallow, infrequent or apparently absent respiration. Severe hypothermia may result in death of the victim. Practically, the onset of severe shivering signals danger to personnel and exposure to cold will be immediately terminated for any severely shivering worker.

Signs of hypothermia are as follows:

- Severe shivering
- Abnormal behavior
- Slowing
- Stumbling
- Weakness
- Repeated falling
- Inability to walk
- Collapse
- Stupor
- Unconsciousness

103.4 METHODS OF CONTROLLING COLD STRESS

103.4.1 Personal Protective Equipment

Since prolonged exposure to cold air, or immersion in cold water, at temperatures well above freezing can lead to dangerous hypothermia, whole body protection must be provided as follows:

- Adequate insulating clothing to maintain core temperatures above 97°F must be provided to workers if work is performed in air temperatures below 40°F. Wind chill or the cooling power of the air is a critical factor. The higher the wind speed and the lower the temperature in the work area, the greater the insulation value of the protective clothing is required. The equivalent chill temperature must be used when estimating the combined cooling effect of wind and low air temperatures on exposed skin or when determining clothing insulation requirements to maintain the deep body core temperature.
- Older workers or workers with circulatory problems require special precautionary protection against cold injury. The use of extra insulating clothing and/or a reduction in the duration of the exposure period are among the special precautions which should be considered. The precautionary actions to be taken will depend upon the physical condition of the work and should be determined with the advice of a physician with knowledge of the cold stress factors and the medical condition of the worker.
- Special protection of the hands is required to maintain manual dexterity as follows:
 - If fine work is to be performed with bare hands for more than 10-20 minutes in an environment below 60°F, special provisions will be established for keeping the worker's hands warm. For this purpose, warm air jets, radiant heaters (fuel burner or electric radiator), or contact warm plates may be utilized. Metal handles of tools and control bars will be covered by thermal insulating material at temperatures below 30°F.
 - If the air temperature falls below 60°F for sedentary, 40°F for light, or 20°F for moderate work and fine manual dexterity is not required, then gloves will be used by the workers.
- To prevent contact frostbite, the workers must wear anti-contact gloves and follow the provisions shown below:
 - When cold surfaces below 20°F are within reach, a warning should be given to each worker by his supervisor to prevent inadvertent contact by bare skin.

- If the air temperature is 0°F or less, the hands should be protected by mittens. Machine controls and tools for use in cold conditions should be designed so that they can be handled without removing the mittens.
- Provisions for additional total body protection is required if work is performed in an environment at or below 40°F. The workers will wear cold protective clothing appropriate for the level of cold and physical activity:
 - If the air velocity at the job site is increased by wind, draft, or artificial ventilating equipment, the cooling effect of the wind will be reduced by shielding the work area, or be wearing an easily removable outer windbreak garment.
 - If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of the clothing in use will be of a type impermeable to water. The outer garments must include provisions for easy ventilation in order to prevent wetting of inner layers by sweat. If work is done at normal temperatures or in a hot environment before entering the cold area, the employee will make sure that his clothing is not wet as a consequence of sweating. If his clothing is wet, the employee will change into dry clothes before entering the cold area. The workers will change socks and any removable felt insoles at regular daily intervals or use vapor barrier boots. The optimal frequency of change will be determined empirically and may vary individually and according to the type of shoe worn and how much the individual's feet sweat.
 - If extremities, ears, toes, and nose cannot be protected sufficiently to prevent sensation of excessive cold or frostbite by handwear, footwear, and face masks, these protective items will be supplied in auxiliary heated versions.
 - If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work will be modified or suspended until adequate clothing is made available or until weather conditions improve.
 - Workers handling evaporative liquid (gasoline, alcohol, or cleaning fluids) at air temperatures below 40°F will take special precautions to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling. Special note should be taken of the particularly acute effects of splashes of "cryogenic fluids" or those liquids with a boiling point just above ambient temperatures.

103.4.2 Work-Warming Regimen

If work is performed continuously in the cold at 20°F or below, heated warming shelters will be made available for use by employees during warm-up breaks. A work-warming regimen will be established using Table HS-103-2. This table assumes that all workers are properly clothed for periods of work at temperatures below freezing.

When entering the heated shelter the outer layer of clothing will be removed and the remainder of the clothing loosened to permit sweat evaporation or a change of dry work clothing provided. A change of dry work clothing may be provided as necessary to prevent workers from returning to their work with wet clothing. Dehydration, or the loss of body fluids, occurs insidiously in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee may not be permitted because of a diuretic and circulatory effect.

For work practices at or below 10°F the following will apply:

- The worker will be under constant protective observation (buddy system or other direct supervision).
- The work rate should not be so high as to cause sweating that will result in wet clothing. If heavy work must be done, all rest periods must be taken in heated shelters and the opportunity for changing into dry clothing will be provided.
- Provision will be made to make sure employees to be accustomed to the working conditions and required protective clothing.
- The weight and bulkiness of clothing will be included in estimating the required work performance and weights to be lifted by the worker.
- The work will be arranged in such a way that sitting still or standing still for long periods is minimized.
- Unprotected metal chair seats will not be used. The worker should be protected from drafts to the greatest extent possible.
- The workers will be instructed in cold weather procedures. The training program will include as a minimum instruction in:
 - Safe work practices.
 - Proper rewarming procedures and appropriate first aid treatment.

- Proper clothing practices.
- Proper eating and drinking habits.
- Recognition of impending frostbite.
- Recognition of signs and symptoms of impending hypothermia or excessive cooling of the body even when shivering does not occur.

103.5 MONITORING

Monitoring is required as follows:

- A thermometer accurate to 1°F will be assigned at any work place where the environmental temperature is known or expected to be below 60°F to enable overall compliance with the requirements of this policy.
- Whenever the air temperature at a work place falls to 30°F or below, the dry-bulb temperature and wind speed will be measured and recorded at least every 4 hours.
- The equivalent chill temperature will be obtained from Table HS-103-1 in all cases where air movement measurements are required, and will be recorded with the other data in the site log together with a record of the length of time spent working and resting.

103.6 EMERGENCY ACTION

- Remove the victim from the hypothermia/frostbite producing environment.
- Seek expert medical help immediately.
- Reduce handling to a minimum. Do not rub or massage the victim.
- Prevent further body heat loss by covering the victim lightly with blankets. Plastic may be used for further insulation. Do not cover the victim's face.
- If the victim is still conscious administer hot drinks; encourage activity, such as walking while wrapped in a blanket. Any form of sedative, tranquilizer or analgesic (pain reliever) will not be administered because these may facilitate further heat loss and convert moderate hypothermia into a severe case.

103.7 REFERENCES

American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances in the Work Environment, 1989-1990.

OPERATING PROCEDURE HS-501

PERSONNEL DECONTAMINATION

501.1 PURPOSE

Personnel engaged in hazardous waste site investigation or remediation can become contaminated in several ways, including being splashed with liquid chemical products or contaminated water while drilling, developing, testing, and sampling wells; handling chemical wastes, contaminated soil or water, or contaminated equipment; walking on contaminated soil or through contaminated surface water; and contact with chemical vapors, dusts, fumes, and mists. Although protective clothing helps prevent the wearer from becoming contaminated, contamination can occur. Decontamination reduces dermal exposure time. It also prevents hazardous materials from being transferred from protective clothing to wearer and to clean areas where unprotected individuals can be exposed.

Decontamination consists of removing contaminated clothing and washing the skin to remove contaminants. How extensive the decontamination process must be depends primarily on the types of contaminants and the nature of on-site activities planned. As the toxicity of the contaminants and the magnitude of potential contamination of personnel increases, the decontamination process becomes increasingly more extensive and thorough. This operating procedure describes decontamination guidelines. Procedures for field operations must be developed on a site-by-site basis.

501.2 RESPONSIBLE AUTHORITY

Decontamination operations at each hazardous waste site shall be supervised by the Site Health and Safety Officer.

501.3 DECONTAMINATION PROCEDURES

501.3.1 Equipment Worn

- Full-face respirator with canister or cartridges
- Hard hat
- Chemical-resistant safety boots with or without boot covers
- Inner and outer gloves
- One piece, hooded, chemical-resistant splash suit (example: polyethylene or Saranex-coated Tyvek coverall)

501.3.2 Decontamination Facility Set Up

The decon facility should have a minimum of four stations: (1) segregated equipment drop station; (2) coverall, boot, and glove wash and rinse station; (3) coverall and outer glove removal station; and (4) respirator, boots, and inner glove removal station.

501.3.3 Station 1 - Segregated Equipment Drop

Deposit equipment used in the exclusion zone (e.g. tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on a plastic drop cloth or in plastic-lined containers.

501.3.4 Station 2 - Boot Wash and Rinse

Step into the first container of decontamination solution and scrub bottom and sides of boots up to taped area to remove gross contamination. After boots have been scrubbed, step into the second container of decontamination solution and repeat the washing process. Finally, step into container of rinse water and rinse boots thoroughly. Proceed to Station 3.

501.3.5 Station 3 - Outer Glove Wash and Rinse

Place gloved hands in container of decontamination solution and wash gloves. Use a brush if necessary. After washing the gloves, place hands in container of rinse water and rinse gloves thoroughly. This station and Station 2 may be combined into one station if protective equipment is not grossly contaminated.

501.3.6 Station 4 - Coverall and Outer Glove Removal

If used, remove tape from legs and wrists as well as from coverall zipper. Then, remove coverall and gloves in that order. Care must be taken to prevent transfer of contaminants from coverall to underclothes. Transfer can be minimized by rolling or folding the coverall as it is being removed so that the coverall is turned inside-out. Place tape, coveralls, and outer gloves in the plastic lined receptacle provided at this station.

501.3.7 Station 5 - Respirator, Boot, and Inner Glove Removal

Remove respirator and boots and place them in receptacles provided at this station. Remove inner gloves and discard in receptacle provided.

501.3.8 Station 6 - Hand And Face Wash and Street Shoe Donning

Wash, rinse, and dry hands and face, then don street shoes. If highly toxic, corrosive, or skin absorbable chemicals are known to be present, a shower facility should be set up in the support area and personnel required to shower before leaving the site.

501.4 LEVEL OF PROTECTION FOR DECONTAMINATION PERSONNEL

Personnel assisting in the decontamination process must wear the same personal protective equipment worn by personnel being decontaminated.

501.5 DECONTAMINATION SOLUTION

A decontamination solution should be capable of removing or converting to a harmless substance the contaminant of concern without harming the object being decontaminated. The preferred solution is a mixture of detergent and water, which is a relatively safe option compared to chemical decontaminants. The recommended solution for decontaminating boots and gloves is 1 to 1.5 tablespoons of Alconox per gallon of warm water. Skin surfaces should be decontaminated by washing with hand soap and water. The decontamination solution must be changed when it no longer foams or when it becomes extremely dirty. Rinse water must be changed when it becomes discolored, begins to foam, or when the decontamination solution cannot be removed.

501.6 DECONTAMINATION EQUIPMENT AND SUPPLIES

The following is a list of decontamination equipment and supplies:

- 1 to 2 plastic drop cloths, minimum thickness of 3 mills and minimum size of 9' x 12'.
- 4 to 7 containers, 30 to 50 gallon capacity (galvanized tub, stock tank, or children's wading pool), for washing and rinsing.
- 1 to 2 receptacles (drums or plastic trash cans) for receiving contaminated disposable equipment and trash.
- 1 to 2 55-gallon drums for storage of contaminated wash and rinse water.
- Plastic bags of different sizes for temporary storage of contaminated equipment and for lining trash receptacles.
- 2 to 4 long-handled soft bristled brushes (e.g., toilet brush).
- 3 to 4-inch diameter plastic pipe or 4x4-inch timber to raise edges of drop cloth to contain contaminated wash and rinse water spilled during decontamination. Other methods may be used.
- Detergent (e.g. Alconox) and hand soap.
- Fresh water.
- Paper towels for drying hands, face, and equipment.
- Chairs or benches for personnel to sit on while removing boots.
- Shower facility with lockers (optional).

OPERATING PROCEDURE HS-502

EQUIPMENT DECONTAMINATION

502.1 PURPOSE

To establish guidelines for the decontamination of equipment used at hazardous waste sites to minimize the risk of contaminant exposure to personnel, and minimize the potential for off site migration of contaminants.

502.2 RESPONSIBLE AUTHORITY

Decontamination operations at each hazardous waste site shall be supervised by the Site Health and Safety Officer.

502.3 EQUIPMENT DECONTAMINATION FACILITIES

Decontamination facilities will vary depending on site conditions and the magnitude and duration of individual projects. Mobile decontamination trailers, permanent decontamination stations, or temporary decontamination stations will be provided depending on which type of station is appropriate for each site. Mobile decontamination trailers will be equipped with a 2,000 psi steam cleaner, a portable water supply, and a decontamination water collection system. The trailer will also be equipped with ramps to allow vehicles to drive onto it. The floor of the trailer will be constructed of steel grating over a large catch basin. The catch basin drains to a sump that is pumped to trailer mounted storage tanks. Sidewalls will be erected on the trailer to prevent sprayed water from falling outside of the collection area.

For long-term projects, a permanent equipment decontamination station will be constructed on a concrete or similarly constructed pad with sidewalls. The pad will be sloped to allow decontamination water to run off into a catch basin or similar collection system. The pad will be constructed large enough to hold the largest piece of equipment that will be used at the site. Equipment will be cleaned using a 2,000 psi steam cleaner.

Temporary equipment decontamination stations will consist of visqueen placed on the ground over berming. Side walls will be erected to prevent sprayed water from falling outside of the station. The station will be sloped to allow the collection of decontamination water in a portable sump. Cleaning will be accomplished using a 2,000 psi steam cleaner.

Decontamination water stored in the storage tanks and portable sumps will be sampled and analyzed for proper disposal if required by the treatment/disposal facility. Soil and sludge from the decontamination stations will be collected in appropriate containers and sampled if required by the treatment/disposal facility. Decontamination and disposal of decontamination waste will be performed in accordance with 40 CFR 265.114. Decontamination waste will be treated or disposed of in permitted recycling, treatment, and/or disposal facilities.

502.4 DECONTAMINATION OF LARGE EQUIPMENT AND VEHICLES

All large equipment and vehicles used in the exclusion zone of hazardous waste sites will be decontaminated before they are moved to the support zone. Soil and sediment will be removed from the equipment using hand tools, brushes, brooms, etc. The equipment will then be driven onto the decontamination trailer or station where it will be high pressure rinsed with hot water (minimum 120°F) using a 2,000 psi steam cleaner. The decontamination rinsate will be collected in appropriate containers for recycling, treatment, or disposal, as appropriate. Decontamination will be performed as outlined in the following sections to prevent tracking of potential hazardous materials off site.

502.5 DECONTAMINATION OF SMALL EQUIPMENT AND HAND TOOLS

Small equipment, sampling equipment, and hand tools will be decontaminated using buckets or tubs that are placed on the decontamination trailer or station. If a decontamination trailer or station is not present at the site, visqueen will be placed on the ground over berming to contain any spilled rinsate. The following procedures will be followed for the decontamination of small equipment and hand tools:

- All loose soil and sediment will be removed using bristle brushes.
- The equipment will be washed in a nonphosphate detergent solution using scrub brushes.
- Following the detergent wash, the equipment will be rinsed with tap water.
- As the final step, the equipment will be rinsed in distilled water and allowed to air dry.

The decontamination rinsate will be collected in appropriate containers for recycling, treatment, or disposal, as appropriate.

502.6 REFERENCES

U. S. Environmental Protection Agency, Code of Federal Regulations Title 40 Part 265.114, Disposal or Decontamination of Equipment, Structures, and Soils.

OPERATING PROCEDURE NO. HS-504

SITE CONTROL

504.1 PURPOSE

To provide guidance in establishing site control during hazardous waste site activities. Site control consists of providing for security, communications, layout of site activity facilities (i.e., command post, decontamination area, etc.), setting up work zones, and monitoring of weather conditions.

504.2 SECURITY

Site security should be established to limit access to the site and prevent unauthorized personnel from entering the site area. The following should be considered when providing site security:

- The site should be secured with fencing (i.e., chain link fence, wire, or barriers), as appropriate.
- A security guard should be provided as necessary, and be located in the vicinity of the command post (*office trailer*).
- A controlled access to the regulated zones should be established. This controlled access should be through a decontamination unit or area.
- Only authorized personnel are permitted to enter regulated zones. No one shall enter the site without appropriate authorization.
- All persons entering the regulated zones shall be equipped with appropriate personal protective devices.
- All persons entering the regulated zones must be familiar with and abide by the health and safety plan.

504.3 COMMUNICATIONS

Methods of maintaining communications on site between site personnel should be provided. Communication between the command post and personnel working in regulated zones should be provided. Communication, as well as visual contact, should be maintained between personnel in regulated zones. Use of the "buddy" system should be practiced. The following methods of communication should be utilized as appropriate:

- Radios
- Hand signals
- Air horns

- Bells
- Flags
- Boards or signs

Emergency information (routes, phone numbers, etc.) should be posted on site.

504.4 SITE LAYOUT

In developing a site layout for site investigation activities and establishing command post, decontamination facilities, etc., the following criteria should be considered:

- Site location and ownership
- Location of roads, power lines, etc.
- Terrain (line-of-sight, avenues of approach, ingress and egress)
- Prevailing wind direction
- Location of sources of water and power
- Proximity to inhabitants or residents
- Location of emergency facilities

504.5 WORK ZONES

Work zones should be established within a site as appropriate depending on the degree of potential hazard and the type of work activities being performed. Areas known or suspected to be of high potential should be designated as regulated or exclusion zones. The immediate areas (e.g., 25-foot radius) around intrusive activities (i.e., drilling, excavating, etc.) may be classified as regulated or exclusionary. Decontamination areas should also be regulated. Appropriate personal protective equipment should be worn by personnel in regulated zones, in accordance with the site specific safety plan for the site. Command posts should be in clean areas upwind of contaminated or exclusionary zones.

504.6 WEATHER CONDITIONS

Monitoring of weather conditions should be performed during site activities as may be appropriate. Monitoring for the following should be considered:

- Wind direction (vane, wind sock, flagging)
- Temperature for heat stress conditions
- Temperature for cold stress conditions

504.7 DOCUMENTATION

Description of site control should be presented in the site safety plan, including a plot plan of the site indicating locations of site features and work facilities. Records should be maintained regarding site access and monitoring of weather conditions. The Site Supervisor or his/her designate will be responsible for monitoring site access and weather conditions.

OPERATING PROCEDURE NO. HS-523

OPERATION OF STEAM CLEANER AND POWER WASHER

523.1 PURPOSE

To provide basic guidance for the safe operation of portable steam cleaners and power washers.

523.2 APPLICABILITY

This procedure applies to the operation of portable steam cleaners and power washers.

523.3 HAZARDS

A steam cleaner is capable of generating up to 200psi of internal pressure. This amount of pressure can cause weakened components to burst and release high velocity pieces that are capable of causing puncture injuries. Steam temperatures can exceed 250°F. Contact with the pressurized steam, heating unit, gas engine, and spray nozzle can cause third degree burns. A power washer operates at considerably less pressure and much lower temperatures, but still has the capacity to cause similar injuries of lesser magnitude. Consideration should be given to the contaminants in the soil when these units are used for decontamination because the heat and/or nozzle velocity may create an airborne inhalation exposure.

523.4 SAFE PRACTICES

The manufacturer's procedure should be read until it is understood and strictly adhered to at all times. The manufacturer's operating parameters must never be deviated from during operation. Thick canvas lined neoprene gloves generally provide adequate protection from heat and site contaminants. Rubber boots, Tyvek coveralls with a hood, and safety glasses are also appropriate protection to be worn. A face shield must also be worn for close contact work.

APPENDIX G

JOB HAZARD ANALYSIS

KES

HAZARD ANALYSIS		
TASK: Mobilization / Demobilization		JOB TITLE: Laborers, Operators and Drivers
MINIMUM PERSONNEL PROTECTIVE EQUIPMENT TO BE USED: Level D - Hardhat, Safety-Toed work boots, safety glasses, hearing protection if warranted and standard work clothes (shirts must be at least short sleeved and full length pants). Modified Level D and Level C as indicated in Health and Safety Plan.		
JOB STEPS	HAZARDS	RECOMMENDED SOLUTIONS
1. On / off load trucks with equipment and materials	(SBy) Loose / uncontrolled equipment, parts or materials (E) Physical Hazards (CW) Rough surfaces and sharp edges (CBe) Shifting loads	(ADM) Inspection of truck prior to unloading for possible need of specialized equipment. (ADM) safety inspection of equipment (ADM) Qualified operator on equipment (ENG/ADM) Use taglines and designated spotters (ADM) Proper housekeeping procedures (PPE) Wear work gloves (ADM) Avoid pinch point areas
2. Spot trucks or equipment	(SBy) Unstable terrain (CW) Overhead Utilities	(ADM) Move vehicle to stable area (ENG) Maintain clearance between equipment and overhead lives.

Hazard Codes:

CBe – Caught Between	FB – Fall Below Level
CBy – Contacted By	FS – Fall Same Level
CW – Contact With	SBy – Struck BY
E – Exposure	TI – Trapped IN

Recommended Solution Codes:

ADM – Administrative Control
ENG – Engineering Control
PPE – Personnel Protective Equipment

KES

HAZARD ANALYSIS		
TASK: Preparatory Site Setup and Site Cleanup		JOB TITLE: Laborers, Operators
MINIMUM PERSONNEL PROTECTIVE EQUIPMENT TO BE USED: Level D - Hardhat, Safety-Toed work boots, safety glasses, hearing protection if warranted and standard work clothes (shirts must be at least short sleeved and full length pants). Modified Level D and Level C as indicated in Health and Safety Plan.		
JOB STEPS	HAZARDS	RECOMMENDED SOLUTIONS
1. Cleanup of project site / Setup work zones and work areas.	(SBy) Loose / uncontrolled equipment, parts or materials (E) Asbestos dust (CW) Biological hazards (E) Physical Hazards (SO) Lifting injuries (FS) Slips, Trips and Falls	(ADM) Inspection of site (ADM) Qualified operator on equipment (ENG) Wet items / area to eliminate dust (PPE) Wear proper PPE (ADM) Employee Training (PPE) Wear work gloves and proper PPE (ADM) Proper housekeeping procedures (ADM) Instruction in proper lifting techniques (ADM) Keep areas free of tripping hazards (ADM) Proper housekeeping procedures

Hazard Codes:

CBe – Caught Between FB – Fall Below Level
 CBy – Contacted By FS – Fall Same Level
 CW – Contact With SBy – Struck BY
 E – Exposure TI – Trapped IN

Recommended Solution Codes:

ADM – Administrative Control
 ENG – Engineering Control
 PPE – Personnel Protective Equipment

HAZARD ANALYSIS		
TASK: Inventory / Storage of Property Items		JOB TITLE: Laborers, Operators
MINIMUM PERSONNEL PROTECTIVE EQUIPMENT TO BE USED: Level D - Hardhat, Safety-Toed work boots, safety glasses, hearing protection if warranted and standard work clothes (shirts must be at least short sleeved and full length pants). Modified Level D and Level C as indicated in Health and Safety Plan.		
JOB STEPS	HAZARDS	RECOMMENDED SOLUTIONS
1. Removal of items from structures, sorting and placement of items in temporary storage.	(SBy) Loose / uncontrolled equipment, parts or materials and debris	(ADM) Inspection of site prior to beginning work for possible need of specialized equipment.
	(E) Asbestos dust	(ENG) Wet items / area to eliminate dust (PPE) Wear proper PPE
	(CW) Biological hazards	(ADM) Employee Training (ADM) Employee Safety Meetings (PPE) Wear work gloves and proper PPE (ADM) Proper housekeeping procedures
	(E) Physical hazards	
	(CW) Work site debris, rough surfaces, sharp edges	(PPE) Wear work gloves (ADM) Proper housekeeping procedures
	(FS) Slips, Trips and Falls	(ADM) Keep areas free of tripping hazards (ADM) Proper housekeeping procedures

Hazard Codes:

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Recommended Solution Codes:

ADM – Administrative Control
ENG – Engineering Control
PPE – Personnel Protective Equipment

HAZARD ANALYSIS		
TASK: Demolition of Structures	JOB TITLE: Laborers, Operators, Drivers	
MINIMUM PERSONNEL PROTECTIVE EQUIPMENT TO BE USED: Level D - Hardhat, Safety-Toed work boots, safety glasses, hearing protection if warranted and standard work clothes (shirts must be at least short sleeved and full length pants). Modified Level D and Level C as indicated in Health and Safety Plan.		
JOB STEPS	HAZARDS	RECOMMENDED SOLUTIONS
1. Demolition of structures and loading of debris.	(SBy) Loose / uncontrolled equipment, parts or materials and debris (E) Asbestos dust (CW) Biological hazards (E) Physical hazards (CW) Work site debris, rough surfaces, sharp edges (FS) Slips, Trips and Falls	(ADM) Qualified operator on equipment (ADM) Inspection of site prior to beginning work for possible need of specialized equipment. (ADM) Safety inspection of equipment (ENG) Wet items / area to eliminate dust (PPE) Wear proper PPE (ADM) Employee Training (ADM) Employee Safety Meetings (PPE) Wear work gloves and proper PPE (ADM) Proper housekeeping procedures (ADM) Employee Safety Meetings (PPE) Wear work gloves and proper PPE (ADM) Proper housekeeping procedures (ADM) Keep areas free of tripping hazards (ADM) Proper housekeeping procedures

Hazard Codes:

CBe – Caught Between	FB – Fall Below Level
CBy – Contacted By	FS – Fall Same Level
CW – Contact With	SBy – Struck BY
E – Exposure	TI – Trapped IN

Recommended Solution Codes:

ADM – Administrative Control
 ENG – Engineering Control
 PPE – Personnel Protective Equipment

HAZARD ANALYSIS		
TASK: Soil Excavation, Loading and Backfilling		JOB TITLE: Laborers, Operators
MINIMUM PERSONNEL PROTECTIVE EQUIPMENT TO BE USED: Level D - Hardhat, Safety-Toed work boots, safety glasses, hearing protection if warranted and standard work clothes (shirts must be at least short sleeved and full length pants). Modified Level D and Level C as indicated in Health and Safety Plan.		
JOB STEPS	HAZARDS	RECOMMENDED SOLUTIONS
1. Excavate and load, and backfill and spread imported soil	<p>(SBy) Loose / uncontrolled equipment, parts or materials and debris</p> <p>(E) Asbestos dust</p> <p>(CW) Biological hazards</p> <p>(E) Physical hazards</p>	<p>(ADM) Qualified operator on equipment</p> <p>(ADM) Inspection of site prior to beginning work for possible need of specialized equipment.</p> <p>(ADM) Safety inspection of equipment</p> <p>(ENG) Wet items / area to eliminate dust</p> <p>(PPE) Wear proper PPE</p> <p>(ADM) Employee Training</p> <p>(ADM) Employee Safety Meetings</p> <p>(PPE) Wear work gloves and proper PPE</p> <p>(ADM) Proper housekeeping procedures</p> <p>(ADM) Employee Safety Meetings</p>

Hazard Codes:

CBe – Caught Between	FB – Fall Below Level
CBy – Contacted By	FS – Fall Same Level
CW – Contact With	SBy – Struck BY
E – Exposure	TI – Trapped I

Recommended Solution Codes:

ADM – Administrative Control
ENG – Engineering Control
PPE – Personnel Protective Equipment

HAZARD ANALYSIS		
TASK: Soil Excavation, Loading and Backfilling Cont.		JOB TITLE: Laborers, Operators, Drivers
MINIMUM PERSONNEL PROTECTIVE EQUIPMENT TO BE USED: Level D - Hardhat, Safety-Toed work boots, safety glasses, hearing protection if warranted and standard work clothes (shirts must be at least short sleeved and full length pants). Modified Level D and Level C as indicated in Health and Safety Plan.		
JOB STEPS	HAZARDS	RECOMMENDED SOLUTIONS
	(CW) Work site debris, rough surfaces, sharp edges (FS) Slips, Trips and Falls (CW) Equipment operation hazards	(PPE) Wear work gloves and proper PPE (ADM) Proper housekeeping procedures (ADM) Keep areas free of tripping hazards (ADM) Proper housekeeping procedures (ADM) Maintain safe equipment distance or use spotter (ADM) Equipment safety inspections (ADM) Pinch point hazards (PPE) Use proper PPE (ADM) Employee safety training (ADM) Use qualified operators

Hazard Codes:

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 CW – Contact With SBy – Struck BY
 E – Exposure TI – Trapped IN

Recommended Solution Codes:

ADM – Administrative Control
 ENG – Engineering Control
 PPE – Personnel Protective Equipment